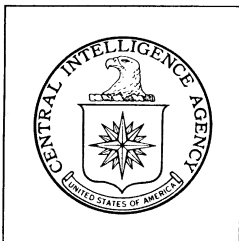


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DIRECTORATE OF
INTELLIGENCE

Imagery Analysis Report

Chemical Fertilizer Combine
Suez, Egypt
May 1967

Declass Review by NIMA/DOD

Top Secret

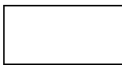
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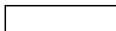


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CHEMICAL FERTILIZER COMBINE, SUEZ, EGYPT



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SUMMARY

This plant, completed prior to 1960, is currently undergoing a major expansion which will probably double its capacity.

This plant is primarily a producer of nitrogenous fertilizers, e.g., calcium nitrate, ammonium nitrate, and ammonium sulphate. As secondary products, the plant produces concentrated and dilute nitric acid, sulfuric acid, aqueous ammonia, and carbon dioxide, which are used in fertilizer production or can be shipped to other plants as feedstock materials.



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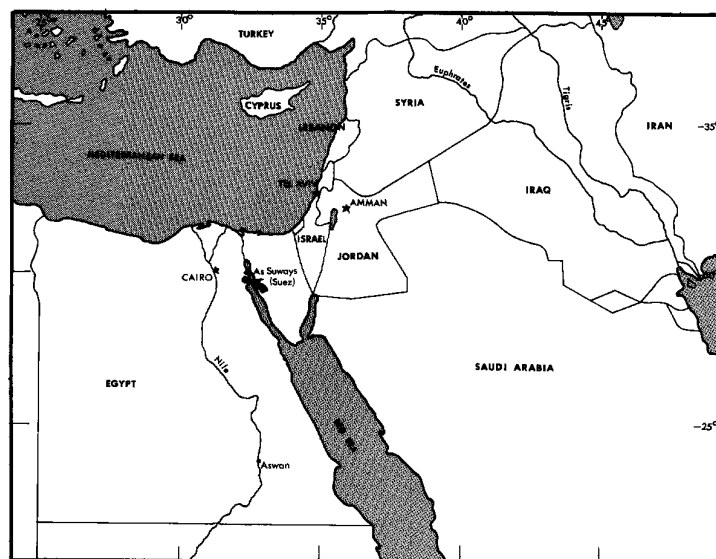


FIGURE 1. LOCATION MAP

INTRODUCTION

This plant is carried in the Basic Encyclopedia as As Suways Chemical Plant SAE (29-56N 32-27E). The plant is located 5 nautical miles (nm) west-southwest of Suez on the west shore of the Gulf of Suez (Figure 1). The purpose of this study is to provide data on this installation so that the fertilizer production potential of Egypt may be more accurately estimated. The latest mission utilized for this report was

A composite line drawing (Figure 4) and selected ground photographs (Figures 5-12) are presented along with a discussion of the installation. Item numbers on the line drawing refer to Table I which gives the function/description, dimensions, roof cover and remarks regarding each item. The ground photos are keyed to the line drawing by area designator and item number.

All measurements have been made by CIA/IAS.

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FIGURE 2. CHEMICAL FERTILIZER COMBINE SUEZ CANAL, EGYPT

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DESCRIPTIONS OF FUNCTIONAL AREAS

For ease of discussion, the plant has been subdivided into functional areas designated A through Q as indicated on Figures 2 and 4.

Area A - Engineering/Open Storage

The facilities in this area include one engineering-type building, two secured unidentified buildings, and a large open storage area containing numerous stockpiles of material.

Area B - Administration/Support

This is the main administration and plant services area.

Area C - Gas Production

The facilities in this area produce hydrogen gas by reforming natural gas or refinery off-gas. The hydrogen is used in the ammonia plant (Area F) and will be used in the new ammonia plant (Area H) which is currently under construction. Items 6 and 12-16 were not part of the original plant but were added after [REDACTED]

Area D - Nitric Acid Plant

This area consists of an air separation plant (Item 8) which separates air into oxygen and nitrogen. The nitrogen is used to produce ammonia, and the oxygen is used as an oxidizer of ammonia in the production of nitric acid. The acid is used in the production of calcium nitrate and ammonium nitrate. This plant was added after [REDACTED]

Area E - Water Treatment Facility

This area contains two large spray ponds (Items 1 and 2) and a sanitary water tower (Item 3).

Area F - Ammonia Production Plant

This area contains a compressor/synthesis building (Item 1), a degasifying tower (Item 2), one ammonia storage building (Item 7), and two Horton spheres for aqueous ammonia storage (Items 5 and 6). The ammonia is used in production of ammonium nitrate and nitric acid.

Area G - Fuel Storage

The area contains four fuel storage tanks (Items 1, 2, 6, and 7) and three unidentified buildings (Items 3, 4, and 5) which are probably used for controlling the amounts and types of fuel to various components within the installation.

Area H - Ammonia Production Plant Under Construction

This plant is in the late stages of construction. The significant features are the compressor/synthesis building (Item 4) and the Horton spheres (Items 7 and 8) which, when completed, will be used for storing aqueous ammonia. Item 9 is storage for refinery gas which could be used as feedstock for the reform furnaces in Area C.

Area I - Fuel Storage

This storage facility was probably constructed to serve the additional nitric acid plant and ammonia plant (Areas D and H).

Area J - Sulfuric Acid Plant (Contact Process)

This plant produces sulfuric acid which is used in the production of ammonium sulfate and concentrated nitric acid.

Area K - Nitric Acid Plant

This area contains an air separation plant, a large reactor building, and five banks of seven high-pressure nitric acid absorbers each. The nitric acid produced at this plant is used in the production of ammonium and calcium nitrate.

Area L - Thermal Power Plant

This plant is the only source of power for the combine. Ground photographs of the steam turbines and boilers at this plant are shown on Figures 11 and 12.

Area M - Support Area

This area is the main engineering services area for the plant. It contains a welding shop, machine workshop, service station, and storage facilities.

Area N - Support/Open Storage

This area consists of a large probable vehicle maintenance building, an unidentified building under construction, and a large open storage area.

Area O - Ammonium Sulphate Production Plant Under Construction

This plant consists of a production/reactor building, a large fertilizer warehouse, and two unidentified buildings under construction.

Area P - Fertilizer Production and Shipping

This area consists of a calcium nitrate plant (Item 9), an ammonium nitrate plant (Item 17), two fertilizer warehouses, a bag production plant, and various associated components.

Area Q - Possible Research and Development

This area consists of one large possible R&D-type building and several associated unidentified buildings. There is no apparent physical connection between this facility and the fertilizer combine.

OTHER FACILITIES

A secured workers housing area is located immediately west of the chemical fertilizer combine. The area consists of 36 multistory apartment-type buildings and administrative, recreational, and social facilities.

The identifications of service facilities (police station, fire house, service station, etc.) were made from captions on CIA ground photographs. In no case was there any reason to dispute these identifications on the basis of aerial photography.

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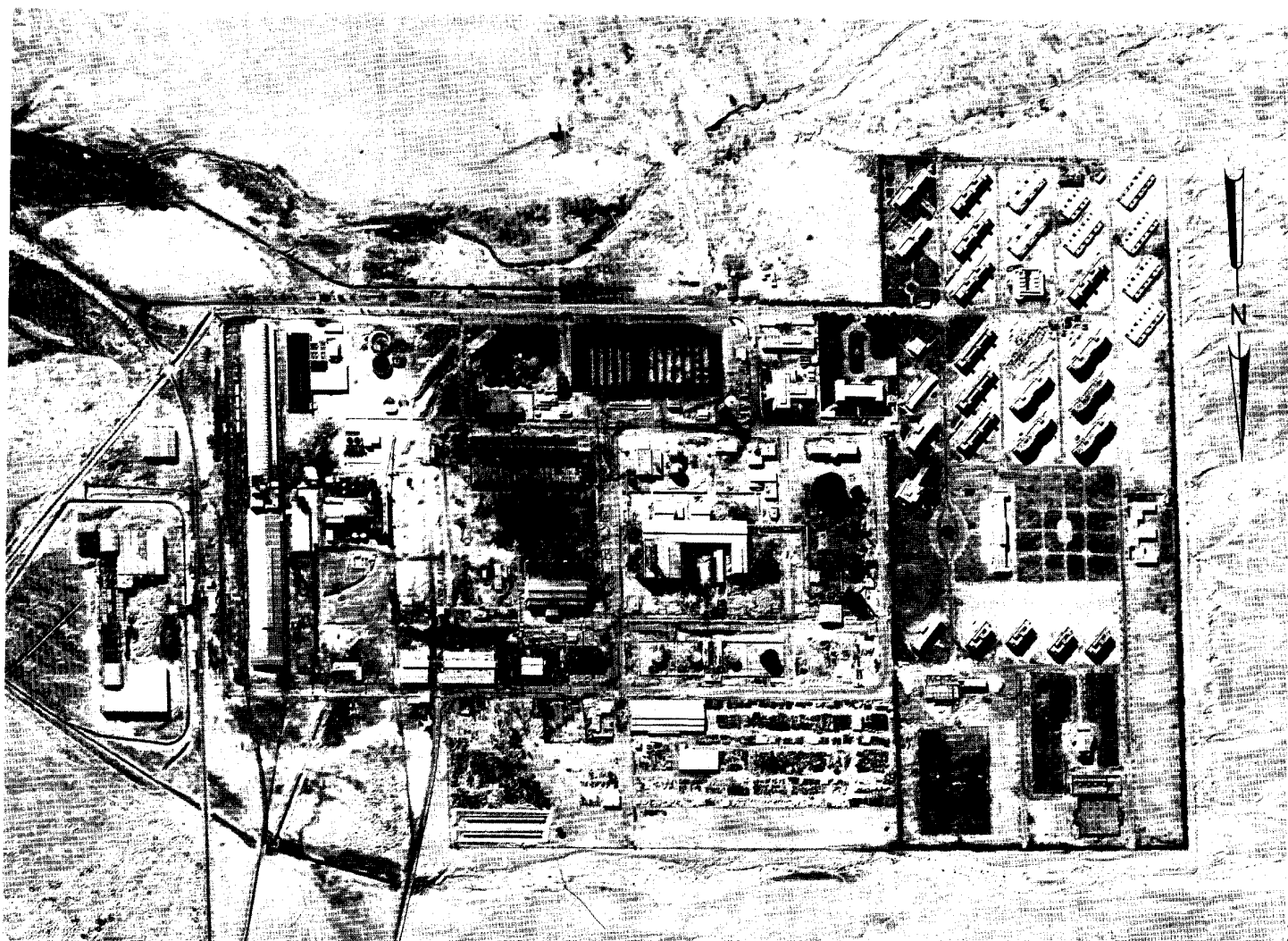


FIGURE 3. CHEMICAL FERTILIZER COMBINE, SUEZ, EGYPT.

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IMAGERY ANALYSIS SERVICE

TABLE I
CHEMICAL FERTILIZER COMBINE, SUEZ, EGYPT

Area	Item No.	Function/ Description	Dimensions (Feet)	Roof Cover (Sq. Ft.)	Construction Status: *Present 1960 #U/C	Remarks	Area	Item No.	Function/ Description	Dimensions (Feet)	Roof Cover (Sq. Ft.)	Construction Status: *Present 1960 #U/C	Remarks
A. Engineering/Open Storage							E. Water Treatment Facility						
	1	Engineering Shop	300 x 150	45,000	#			1	Spray Pond	275 x 200	55,000	*	
	2	U/I Building	50 x 25	1,250	*			2	Spray Pond	225 x 200	45,000	*	
	3	U/I Building	70 x 25	1,750	*			3	Water Tower	35 (dia. at top)		*	(See Figure 8)
	4	Open Storage			#	Stockpiles of U/I Material		4	Substation	35 x 30	1,050	*	
B. Administration/Support								5	U/I Building	50 x 25	1,250	*	
	1	Administration	150 x 70	10,500	*			6	Pumphouse	145 x 50	7,250	*	
	2	Fire House	50 x 25	1,250	*		F. Ammonia Production Plant						
	3	U/I Support	180 x 20	3,600	*			1	Ammonia Synthesis Building	340 x 190	64,600	*	
	4	Locker Building	170 x 40	6,800	*			2	Degasifying Tower	50 x 35	1,750	*	(See Figure 6)
	5	Canteen	150 x 50	7,500	*			3	Substation	120 x 25	3,000	*	
	6	Staff House	150 x 40	6,000	*			4	Reagent Tanks (4)			*	
	7	Laboratory	85 x 40	3,400	*			5	Ammonia Storage	50 (dia.)		*	(See Figure 8)
	8	Vehicle Maintenance	90 x 35	3,150	*			6	Ammonia Storage	50 (dia.)		*	(See Figure 8)
	9	U/I Support	30 x 25	750	*		G. Fuel Storage						
	10	Police Station	70 x 35	2,450	*			1	Storage Tank	50 (dia.)		*	(See Figure 7)
C. Gas Production								2	Storage Tank	35 (dia.)		*	(See Figure 7)
	1	Gas Holder	25 (dia.)		*			3	U/I Building	70 x 20	1,400	*	(See Figure 7)
	2	Gas Holder	90 (dia.)		*	(See Figure 5)		4	U/I Building	50 x 25	1,250	*	(See Figure 7)
	3	Reform Furnace			*	"		5	U/I Building	70 x 20	1,400	*	(See Figure 7)
	4	Reform Furnace			*	"		6	Storage Tank	35 (dia.)		*	(See Figure 7)
	5	Reform Furnace			*	"		7	Storage Tank	35 (dia.)		*	(See Figure 7)
	6	Reform Furnace			#		H. Ammonia Production Plant U/C						
	7	Compressor Building	70 x 45	3,150	*			1	U/I Building	200 x 90	18,000	*	
	8	U/I Building	35 x 35	1,225	*			2	Cooling Pond	120 x 35	4,200	#	
	9	Compressor Building	70 x 45	3,150	*			3	U/I Building	40 x 20	800	#	
	10	U/I Building	30 x 25	750	*			4	Ammonia Synthesis Building U/C	300 x 120	36,000	#	
	11	U/I Building	30 x 30	900	*			5	U/I Building	90 x 30	2,700	#	
	12	U/I Building	60 x 25	1,500	#			6	Possible Cooling Tower U/C	95 x 30	2,850	#	
	13	Gasholder	60 (dia.)		#			7	Ammonia Tank U/C	50 (dia.)		#	
	14	U/I Building	40 x 40	1,600	#			8	Ammonia Tank U/C	50 (dia.)		#	
	15	Cooling Tower	80 x 25	2,000	#	Induced Draft		9	Refinery Gas Storage Tanks (2)	210 x 10		*	
	16	Gasholder	90 (dia.)		#			10	U/I Building	150 x 100	15,000	#	
D. Nitric Acid Plant							I. Fuel Storage						
	1	Absorbers (6)			#			1	Pump House	30 x 30	900	#	
	2	Reactor Building	120 x 45	5,400	#			2	Storage Tanks (3)	50 (dia.)		#	
	3	Processing Equipment			#		J. Sulfuric Acid Plant (Contact Process)						
	4	Processing Equipment			#			1	Sulfur Stockpile			#	
	5	Oxidation Building	120 x 45	5,400	#			2	Reactor Equipment	250 x 100	25,000	#	
	6	Gasholder	60 (dia.)		#			3	Reactor Equipment	30 x 30	900	#	
	7	Gasholder	60 (dia.)		#			4	Acid Storage Tanks	35 (dia.)		#	
	8	Air Separation Plant	90 x 80	7,200	#			5	Acid Storage Tanks	35 (dia.)		#	
	9	Cooling Tower	100 x 60	6,000	#	Induced Draft							

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TABLE I CONTINUED

Area	Item No.	Function/ Description	Dimensions (Feet)	Roof Cover (Sq. Ft.)	Construction Status: *Present 1960 #Present 1967 ø U/C		Remarks	Area	Item No.	Function/ Description	Dimensions (Feet)	Roof Cover (Sq. Ft.)	Construction Status: *Present 1960 #Present 1967 ø U/C		Remarks
K. Nitric Acid Plant	1	Cooling Tower	60 x 25	1,500	*		Induced Draft	O. Ammonium Sulfate Production Plant U/C	1	U/I Building	120 x 100	12,000	#		
	2	Pump House	35 x 20	700	*				2	Production Build- ing	200 x 60	12,000	#		
	3	Substation	35 x 20	700	*				3	U/I Building U/C	500 x 100	50,000	ø		
	4	High Pressure Absorbers 5 banks of 7 each			*		(See Figure 9)		4	Warehouse	400 x 100	40,000	ø		
	5	Reactor Building	345 x 55	18,975	*			P. Fertilizer Production and Shipping	1	Dorr Clarifiers (2)	60 (dia.)		*		
	6	Air Separation Facility	120 x 50	6,000	*				2	U/I Building	40 x 20	800	*		
	7	Distillation Columns			*				3	U/I Building	70 x 20	1,400	*		
	8	Acid Storage (2)	25 (dia.)		#				4	Water Treatment Plant	115 x 50	5,750	*		
	9	Pumphouse	30 x 20	600	*				5	Reservoirs	235 x 70	16,450	*		
L. Thermal Power Plant	1	Fuel Storage	20 (dia.)		*				6	Substation	50 x 25	1,250	*		
	2	Fuel Storage	15 (dia.)		*				7	Cooling tower	65 x 50	3,250	*		Induced Draft
	3	Generator Hall	140 x 95	13,300	*		(See Figures 11 & 12)		8	Nitric Acid Storage (4)	20 (dia.)		*		
	4	Boilerhouse	35 x 20	700	*				9	Calcium Nitrate Building	160 x 70	11,200	*		
	5	Control House	40 x 40	1,600	*				10	Warehouse	500 x 85	42,500	*		(See Figure 10)
	6	Substation	100 x 60	6,000	#				11	Bagging Plant	100 x 85	8,500	*		
	7	Electrical Shop	25 x 20	500	*				12	Bag-Matts Storage	150 x 60	9,000	*		
	8	Cooling Tower	100 x 60	6,000	*		Induced Draft		13	Storage Tanks (2)	20 (dia.)		*		
M. Support Area	1	Welding Shop	70 x 50	3,500	*				14	U/I Building	40 x 30	1,200	#		
	2	Workshop	160 x 125	20,000	*				15	U/I Building	50 x 30	1,500	#		
	3	Storage	125 x 80	10,000	*				16	Storage Tanks(2)	25 (dia.)		#		
	4	Guardhouse	70 x 20	1,400	*				17	Ammonium Nitrate Building	80 x 60	4,800	#		
	5	Open Storage Area	140 x 100	14,000	#				18	Crushing Building	35 x 35	1,225	#		
	6	Service Station	100 x 50	5,000	#		Expanded between 1960 and 1967		19	U/I Building	100 x 30	3,000	#		
N. Support/Open Storage	1	Open Storage			#			Q. Possible Research and Development	20	Warehouse	300 x 85	25,500	#		
	2	Vehicle Maintenance	280 x 100	28,000	#				21	Bag Production Plant	500 x 85	42,500	*		
	3	U/I Building U/C	280 x 100	28,000	ø				1	U/I Building	90 x 90	8,100	*		
									2	U/I Building	120 x 35	4,200	#		
									3	Guardhouse	40 x 15	600	#		
									4	Guardhouse	40 x 15	600	#		
									5	R&D Building	550 x 210	115,500	*		
									6	U/I Building	100 x 50	5,000	#		
									7	U/I Building	70 x 20	1,400	#		

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WORKERS HOUSING AREA

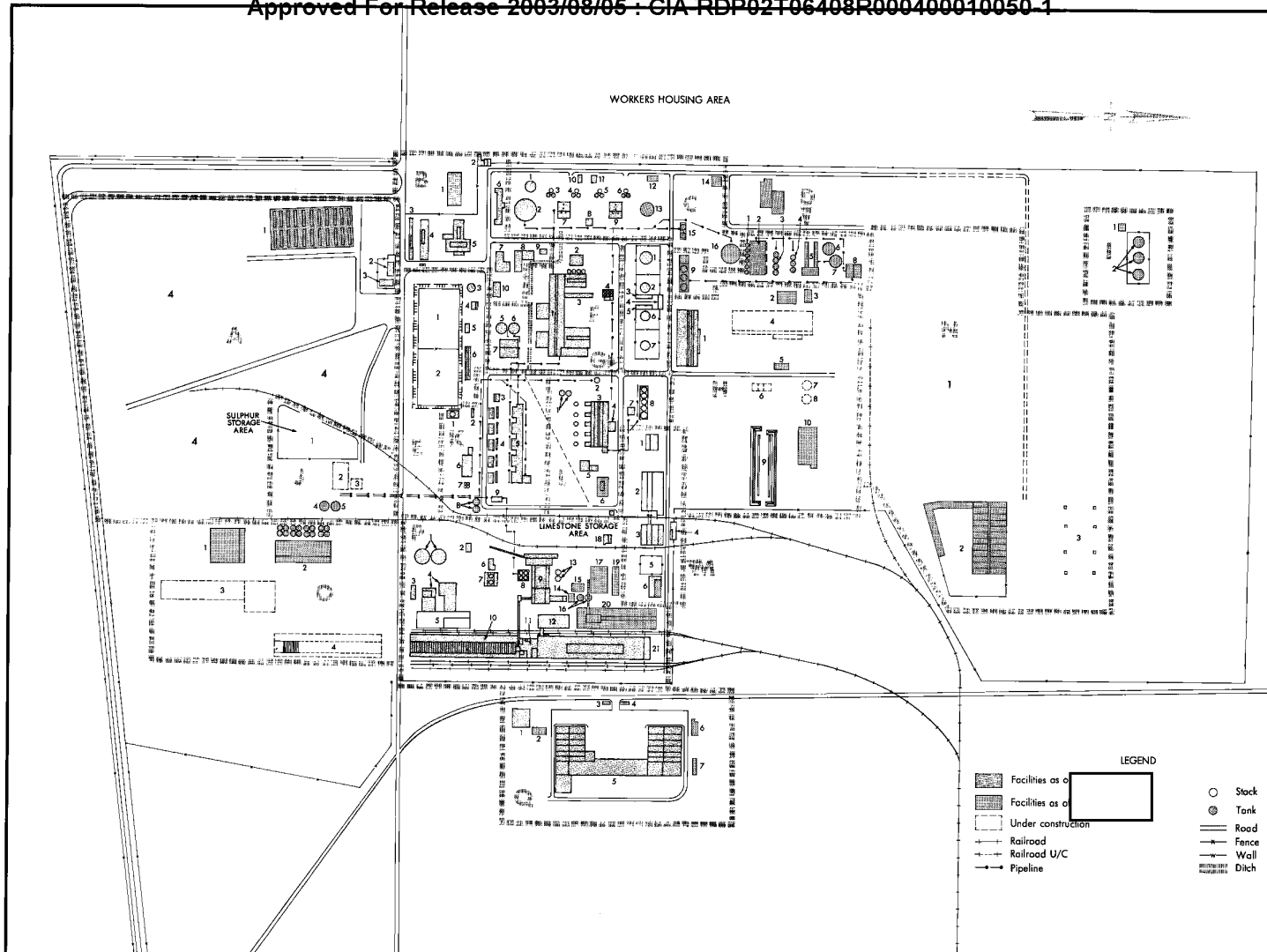


FIGURE 4. COMPOSITE LINE DRAWING

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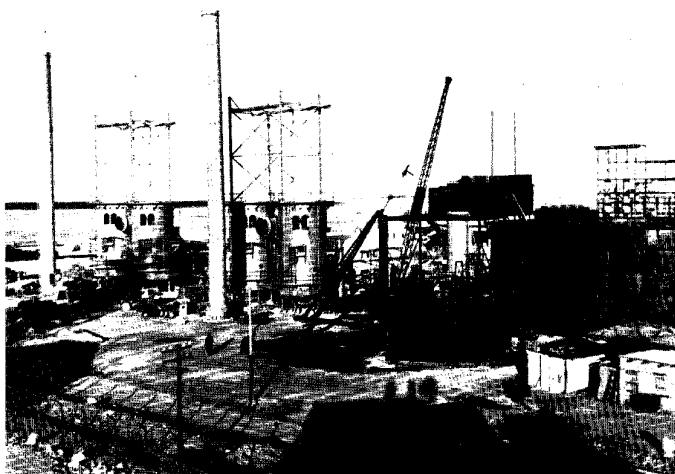


FIGURE 5. REFORM FURNACES C-3,4, VIEW LOOKING NE

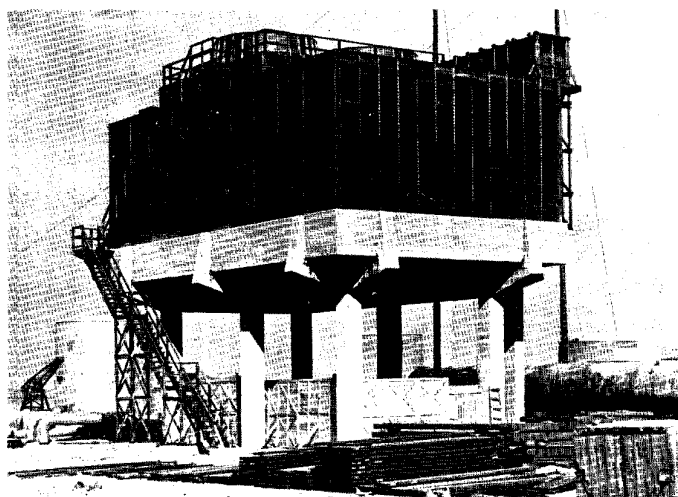


FIGURE 6. DEGASIFYING TOWER F-2, VIEW LOOKING N



FIGURE 7. FUEL TANKS G-2,6,7, VIEW LOOKING NE

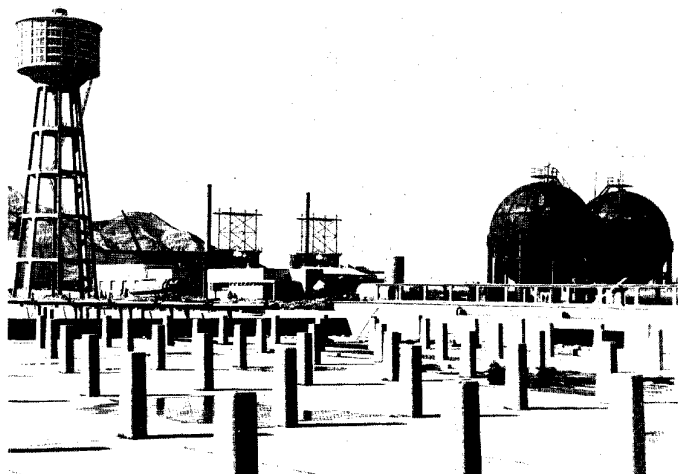


FIGURE 8. WATER TOWER F-3, HOSTON SPHERES F-5,6, VIEW LOOKING NW

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FIGURE 9. NITRIC ACID ABSORBERS K-4, VIEW LOOKING NW

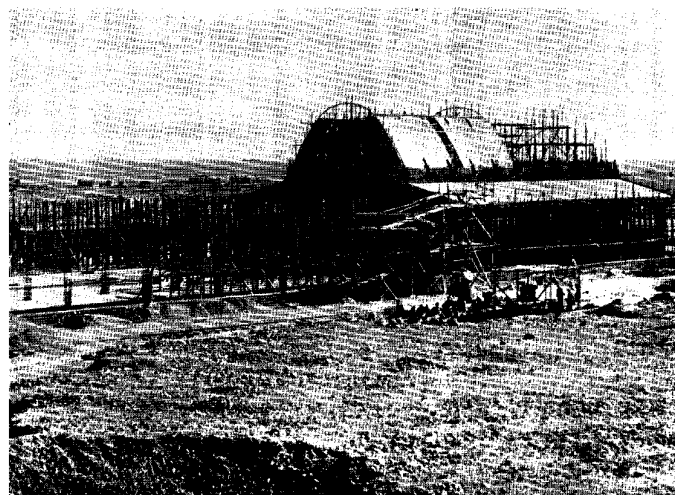


FIGURE 10. FERTILIZER WAREHOUSE P-10 VIEW LOOKING SE

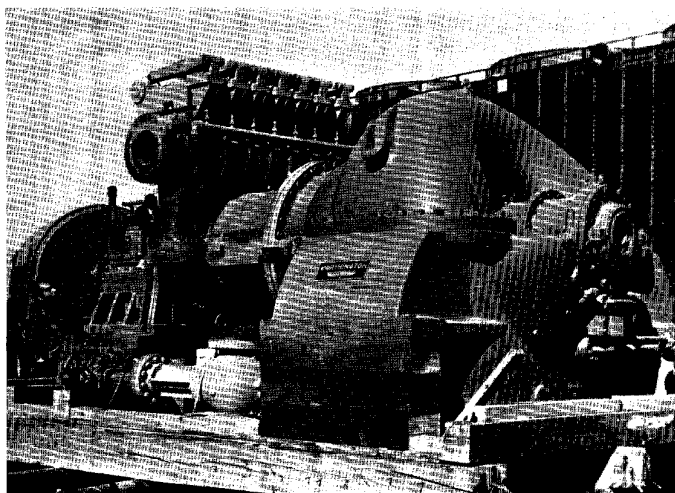


FIGURE 11. STEAM TURBINE AT POWER PLANT L-3

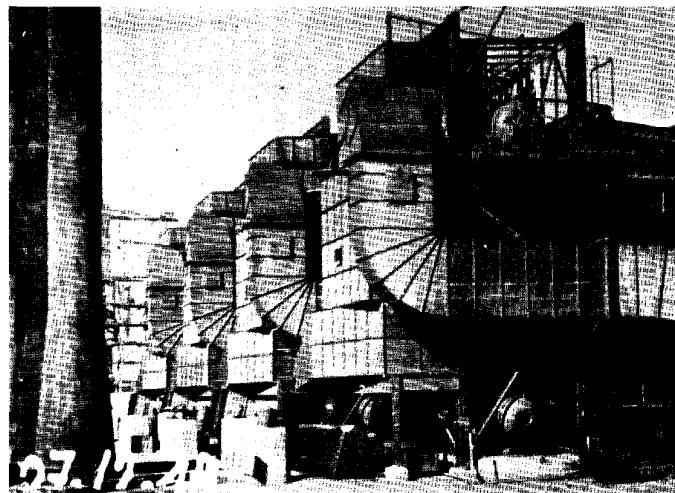


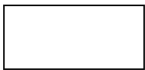
FIGURE 12. BOILERS AT POWER PLANT L-3 VIEW LOOKING NW

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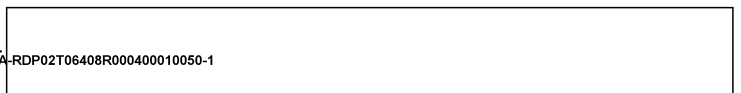
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